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(54) **COARSE FREQUENCY OFFSET ESTIMATOR IN ORTHOGONAL FREQUENCY DIVISION MULTIPLEXING RECEIVER AND METHOD THEREOF**

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(57) **ABSTRACT**

Coarse frequency offset estimation method and device in an orthogonal frequency division multiplexing (OFDM) receiver are provided. The coarse frequency offset estimation device includes a buffer for receiving demodulated symbol $X(k)$ and cyclic shifting the symbol $X(k)$ by a predetermined shift amount d and outputting shifted symbol $X(k+d)$, a reference symbol generator for generating a reference symbol $Z(k)$, a counter for counting the shift amount of d , a partial correlation for receiving the shifted symbol $X(k+d)$ and the phase reference symbol $Z(k)$ and calculating a partial correlation value

$$\sum_{m=0}^{K-1} \left| \sum_{k=m(N/K)}^{(m+1)(N/K)-1} X((k+d)_N) Z^*(k) \right|$$

with respect to K divided bands, wherein a range of shift amount d is between $-N/2$ and $N/2$, and a maximum detector for obtaining a shift amount of d by which the partial correlation value is maximum, and outputting the shift amount of d as an estimated coarse frequency offset value. Thus, stable coarse frequency offset estimation can be performed by a small number of calculations.

6 Claims, 8 Drawing Sheets

